Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of :	)	
	)	Petition for
Amendment of Part 97 of the Commission's Rules	)	Rulemaking
Governing the Amateur Radio Service	)	

Petition For Spectrum Deregulation in the Amateur Service

INTRODUCTION

The petitioners propose to discontinue mandatory segregation of emission modes and the activities using these modes in the Amateur Service, and substitute a voluntary system of coordination to achieve greater, and more efficient, utilization of frequency allocations within the amateur radio service bands. Spectrum utilization would be improved because amateur radio operators would dynamically select from among the entire range of frequencies available in a given band.

An important component of this change is consideration of the existing system of license classes and the desire to maintain motivation for basic licensees to improve their knowledge and skill. We propose retaining sub-bands that today recognize higher license class levels of achievement. In accord with the basic premise of this proposal, such sub bands by license class would also be permitted all modes of operation.

DISCUSSION

The proposed change addresses an imbalance in our ability to use amateur allocations in the high-frequency "shortwave" bands. Amateur activity in these bands favors voice communications (appendix A), and there is a chronic need to allow greater leeway in selecting a place to operate within our frequency range. Such flexibility is currently constrained by FCC regulations defining sub band frequency allocation by mode of operation.

The federally regulated zones do not match today's typical level of use by enthusiasts of Morse code as compared to phone operation. Digital operation is currently anomalous, neither CW nor phone. Phone use, on many bands, often exhibits signs of overcrowding. Our proposal, to discontinue the system of sub band definition by mode in the amateur service, supplies a way to address contemporary patterns of use while retaining and encouraging expansion of traditional voluntary agreements on mode utilization in sub sets of the frequency spectrum.

DISCUSSION (con't.)

We believe the ideal band plan is one where good judgment on the operator's part supports use of any mode and any frequency available within their license class. Good judgment is centered on cooperative, flexible use of frequencies, with a specific goal of avoiding and/or resolving interference to others at a direct and low level, avoiding escalation and any need for outside enforcement.

Guided by the use of good judgment, removal of artificial boundaries would encourage dynamic selection of frequency, affording an operator the best chance to minimize compatibility issues with other modes and activities. This would lead to greater band "loading" and improved utilization by allowing an operator to choose a clear spot on the dial across a greater frequency range.

Intentional interference with communications is a violation of the regulations, independent of the mode in use, and whether automatic, semi automatic, or manually keyed. Sanctions would continue to be available against deliberate interference or problems involving technical signal purity, using volunteer "official observer" type programs. If a documented problem remains chronic or unresolved, the intervention of federal authority would reinforce volunteer OO in self-regulation efforts, as it does today.

Automatic or semi automatic data operation not copied by the human ear becomes of particular concern under our proposal, since the activity would be unencumbered by sub-band. This group of users would have a specific challenge to maintain the good judgment pre-requisite by making certain their telemetry-polling systems recognize the presence of other modes and activities and avoiding interference to other communications. Chronically failing to do so would remain an actionable violation under existing rules against deliberate interference, since it could be shown such judgment had not been exercised.

We contend that the goal of voluntary selection of operating frequencies for improved spectrum use is best achieved through real-time assessment of variables in propagation and radio traffic load. Efforts to improve spectrum use are currently constrained because these variables cannot be accommodated with fulltime, rigidly defined sub-bands.

Additionally, contemporary technology offers interference protection at the receiver to an extent not possible 60 years ago, when protection was implemented by regulatory mandate to divide "phone" and "code" activity. Technology and patterns of use now encourage the more effective coordination that we propose.

Therefore, to address the need to improve use of our entire range of frequencies, we propose a system of coordination that enables operators to adapt to the variables of propagation, and overall levels of use, and to accommodate and cooperatively respect the footprints imposed by our various modes and activities. That is, we propose ending mode-based sub bands in the amateur radio service, and we seek affirmation of established operator responsibility against interference as part of this request for greater latitude in frequency selection.

BENEFITS Enhancing the Basic Purpose of the Amateur Service:

This petition is centered on the premise that all operating interests and emission types enjoy equal status in the amateur service, with emergency communications taking priority. Operation of an amateur station includes a "listen before transmit" function that involves searching for a vacant spot on the dial. Recognizing that all non-emergency communications are of a hobbyist and experimental nature, we propose access to any vacant frequency for any amateur activity within the scope of privileges granted by license class.

Digital experimentation and development will be encouraged in a progressive environment which allows exchanges of data, image and voice on any vacant frequency, defined as one selected to minimize the chance for unintentional interference to other operators.

The DX community and others will benefit from the great reduction in use of split-frequency operation. Split refers to the use of two frequencies on the same band as a means of finding a common way to communicate when international mode and frequency privileges differ.

This proposal also provides for better international coordination of amateur frequencies. IARU (International Amateur Radio Union) acknowledges the need for greater cooperation and coordination of the increasing and changing usage patterns of the amateur HF bands. De-regulation of usage, and flexibility to accommodate changing demand, is a principle goal set forth in band planning discussions. (See IARU HFC-C4, 13 November 2002). Our proposal also aligns U.S. amateur radio operator privileges with the rest of the world. Communications authorities in many countries rely on amateur service licensees to achieve better spectral efficiency through voluntary band plans.

Among those countries, our Canadian neighbors provide an excellent example of voluntary band plan success. Canadian phone operation coexists quite well with U.S. operators in the current U.S. CW/Data sub bands.

Another successful example of voluntary coordination involving U.S. amateurs is the way modes and activities have sorted themselves out on 160 meters, on a basis that has been overwhelmingly cooperative with a long-term record of minimal complaints.

Our proposal, if approved, would reduce potential friction among operators when bands are in heavy use and congested, especially during contests. Greater flexibility in selection of operating frequencies will enhance cooperation between those who choose to participate in organized operating events and those who do not.

Our proposal may benefit other services near certain amateur band edges by maintaining the license class band allocation of licensees, who have not yet demonstrated higher levels of achievement by advancing their license class, safely within our allocations.

BENEFITS (con't.)

By demonstrating improved utilization of our range of frequencies, we can forestall any proposals for use of the amateur radio spectrum by other services. These potential rivals now can see a portion of our bands appear deserted much of the time under today's allocation-by-mode. In reality other modes are quite active and crowded into the top section of the bands.

In sum, greater operating flexibility will significantly relieve conditions of over-crowding attributed to regulatory divisions of available spectrum against popular operating interests.

ISSUES

(See also Appendix B)

Interference:

A certain amount of unintentional interference must be accepted in a hobbyist, experimental communications system. Good judgment remains the tenet guiding when that level must be cooperatively addressed by operators involved. Intentional and/or deliberate interference with communications in process is in violation of the regulations, independent of the mode in use, and whether automatic, semi automatic, or manually keyed.

Operators presuming use of a specific frequency for their use:

The proposal to discontinue forced segregation by mode would drain pressure away from the problem of operators who make squatter's claims on frequency space during times of congestion, since there would be more room and a greater range to move elsewhere.

PROPOSED CHANGES

Section 97.301

(b) For a station having a control operator who has been granted an operator license of Amateur Extra Class:

Wavelength Band	ITU-Region 1	ITU-Region 2	ITU-Region 3	Sharing Requirements See 97.303
MF	kHz	kHz	kHz	
160 m	1810-1850	1800-2000	1800-2000	a,b,c
HF	MHz	MHz	MHz	
80 m	3.50-3.75	3.50-3.75	3.50-3.75	a
75 m	3.75-3.80	3.75-4.00	3.75-4.00	a
40 m	7.0-7.	7.0-7.3	7.0-7.1	a
30 m	10.10-10.15	10.10-10.15	10.10-10.15	d
20 m	14.00-14.35	14.00-14.35	14.00-14.35	
17 m	18.068-18.168	18.068-18.168	18.068-18.168	
15 m	21.00-21.45	21.00-21.45	21.00-21.45	
12 m	24.89-24.99	24.89-24.99	24.89-24.99	
10 m	28.00-29.7	28.00-29.7	28.00-29.7	

PROPOSED CHANGES (con't)

Section 97.301

(c) For a station having a control operator who has been granted an operator license of Amateur Advanced Class:

Wavelength Band	ITU-Region 1	ITU-Region 2	ITU-Region 3	Sharing Requirements See 97.303
MF	kHz	kHz	kHz	
160 m	1810-1850	1800-2000	1800-2000	a,b,c
HF	MHz	MHz	MHz	
80 m	3.525-3.75	3.525-3.75	3.525-3.75	a
75 m	3.775-3.800	3.775-4.00	3.775-3.900	a
40 m	7.025-7.100	7.025-7.300	7.025-7.100	a
30 m	10.10-10.15	10.10-10.15	10.10-10.15	d
20 m	14.025-14.150	14.025-14.35	14.025-14.150	
Do	14.175-14.350	14.175-14.350	14.175-14.350	
17 m	18.068-18.168	18.068-18.168	18.068-18.168	
15 m	21.025-21.200	21.025-21.200	21.025-21.200	
Do	21.225-21.450	21.225-21.450	21.225-21.450	
12 m	24.89-24.99	24.89-24.99	24.89-24.99	
10 m	28.00-29.7	28.00-29.7	28.00-29.7	

PROPOSED CHANGES (con't)

Section 97.301

(d) For a station having a control operator who has been granted an operator license of Amateur General Class:

Wavelength Band	ITU-Region 1	ITU-Region 2	ITU-Region 3	Sharing Requirements See 97.303
MF	kHz	kHz	kHz	
160 m	1810-1850	1800-2000	1800-2000	a,b,c
HF	MHz	MHz	MHz	
80 m	3.525-3.75	3.525-3.75	3.525-3.75	a
75 m		3.850-4.00	3.850-3.900	a
40 m	7.025-7.100	7.025-7.150	7.025-7.100	a
30 m	10.10-10.15	10.10-10.15	10.10-10.15	d
20 m	14.025-14.150 .	14.025-14.150	14.025-14.150	
Do	14.225-14.350	14.225-14.350	14.225-14.350	
17 m	18.068-18.168	18.068-18.168	18.068-18.168	
15 m	21.025-21.200	21.025-21.200	21.025-21.200	
Do	21.3-21.450	21.3-21.450	21.3-21.450	
12 m	24.89-24.99	24.89-24.99	24.89-24.99	
10 m	28.00-29.7	28.00-29.7	28.00-29.7	

PROPOSED CHANGES (con't.)

Section 97.301

(e) For a station having a control operator who has been granted an operator license of Amateur Novice or Technician Plus Class:

Wavelength Band	ITU-Region 1	ITU-Region 2	ITU-Region 3	Sharing Requirements See 97.303
HF	MHz	MHz	MHz	
80 m	3.675-3.725	3.675-3.725	3.675-3.725	a
40 m	7.050-7.075	7.10-7.15	7.050-7.075	a
15 m	21.10-21.2	21.10-21.2	21.10-21.2	
10 m	28.1-28.5	28.1-28.5	28.1-28.5	

(f) For a station having a control operator who has been granted an operator license of Amateur Novice Class:

Wavelength Band	ITU-Region 1	ITU-Region 2	ITU-Region 3	Sharing Requirements See 97.303
VHF	kHz	kHz	kHz	
1.25 m		222-225		a
UHF	MHz	MHz	MHz	
23 cm	1270-1295	1270-1295	1270-1295	i

Appendix A

An Analysis of Band Occupancy by Mode
Art Pightling, K3XF, PG-11-25720

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Executive Summary

This report demonstrates and quantifies amateur radio band occupancy by mode of operation during a typical operating day. It is, by definition, a snapshot in time and subject to several variables that have been addressed, in majority, in the sample collection process.

Introduction

Amateur radio operators congregate in sub bands in accord with tradition as related to their respective modes of operation. The lower sections of allocated frequency spectrum are typically occupied by CW and higher frequency sections by phone. Other communication techniques such as keyboard digital, image, and experimental modes are often conducted in roughly the center of a given band. In the past few years there has been a growing observation that the lower portions of the bands are becoming less and less populated. Conversely, the upper sections are becoming more active with new licensees trending toward phone modes. This report is based upon test data that has been verified and shown to be statistically viable.

Survey Process

The object of the survey is to demonstrate amateur radio band occupancy by mode. Test scheduling, execution, and data collection were accomplished in a consistent manner to yield accurate observations of actual conversations in progress (QSOs).

Determination of test schedule

Observations of the HF bands were conducted for two weeks to ascertain the most likely period(s) necessary for valid data collection. It was found that weekday operation was very heavily biased toward phone operation and unlikely to accurately represent potential CW operations. After these observations it is reasonable to conclude an extended test, which would exceed the scope of this study, would clearly indicate phone QSOs in process exceed CW QSOs in the same time period by a wide margin. Therefore, it was determined testing on a Saturday would yield a representation of band occupancy that would more accurately demonstrate potential and actual band occupancy during peak usage periods. June 4, 2005 was selected as the survey date and a twelve-hour time period from 1200Z to 2359Z.

Test equipment

A typical amateur radio station consisting of a Kenwood TS-2000 and antenna system with dipoles on 160M, 80M, and a delta loop for 40M was the primary data-gathering tool. Additional test equipment that may not appear in the usual operating station was utilized to observe the entire band: 1. A Motorola 2002C spectrum analyzer 2. A FlexRadio SDR-1000 and 3. An AOR AR7030 receiver.

Data gathering process

Amateur radio contacts in process were observed by tuning from the lower end of a given band to the top sequentially and iteratively. When a signal was encountered it was determined if the signal was a contact in process and if an operator party to the contact using a US call was involved. This required significantly more effort than a simple band scan, or count of signals on the band and more accurately represented the occupancy of US operators. As a signal was encountered and validated it was entered in a spreadsheet. After an operator completed a pass another operator performed a second pass and the two passes analyzed for relative percent difference to achieve validation of the data.
Note that this identified who was transmitting and if they were a US amateur or in QSO with a US amateur. It does not count all parties to all QSOs. There were roundtables in process, particularly on the upper end of 40M, which may understate phone operation somewhat. There were also nets (CARS) that provided a count for phone on every pass while they were in session. This may have elevated the phone count and the two situations were considered to offset each other.
The numbers may be different if your antenna system or equipment is different but the ratio of CW to Phone QSOs using the same method should be very close to the results obtained using the process described here.
There was also a CW contest in process and many of the signals on the bands (notably not counted as QSOs) were CQ test. If a contest QSO in process was encountered, and there was a US operator involved it was counted. This may have elevated the CW QSO count somewhat but one must also consider there are amateurs who avoid operation during contests. There was considerable activity but not as many QSOs as might be expected with general band activity at this level. Phone contests could be expected to generate similar results, skewing the count toward more observed phone QSOs.

Band selection criteria

The On Line HF Propagation site (http://salsawaves.com/propagation/frequency.html) was employed to indicate the Maximum Usable Frequency (MUF) for communication from the test location to Europe. Considerable amateur radio operation is focused on communication with distant stations. Europe was chosen as an intermediate 'DX' contact area that would be sought after by both phone and CW operators. The test data collection was done one and two bands below the MUF. Later in the test period lower HF bands were utilized to "follow the action". This process was validated by the higher relative occupancy of band measurement points chosen in accord with this process.

Survey Results

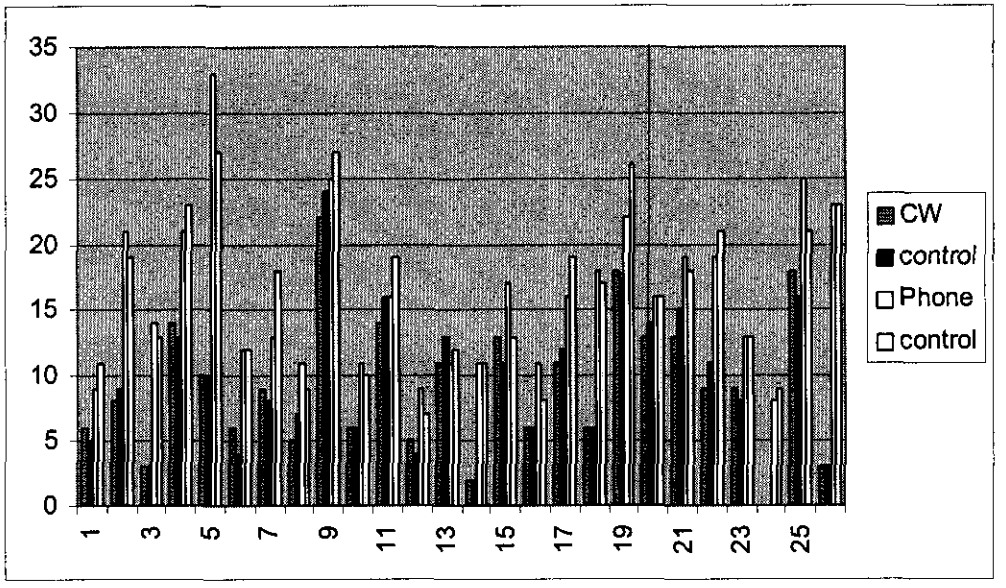
Before the data was analyzed, and observing the bands on a spectrum analyzer, it is easy to get the impression that phone is by far more prevalent than CW operation. However, analysis of the data indicates that the phone to CW QSO ratio aggregated over the test period is 1.75:1 in favor of phone operations.

SURVEY DATA

DTG	MUF -Europe	Band	CW	Control	Phone	Control	Keyboard
604051200Z	15M	20M	6	5	9	11	2
	15M	40M	8	9	21	19	1
0604051300Z	15M	20M	3	3	14	13	1
	15M	40M	14	13	21	23	1
0604051400Z	15M	20M	10	10	33	27	2
	15M	40M	6	4	12	12	0
0604051500Z	15M	20M	9	8	13	18	4
	15M	40M	5	7	11	9	0
0604051600Z	15M	20M	22	24	25	27	1
	15M	40M	6	6	11	10	0
0604051700Z	15M	20M	14	16	16	19	2
	15M	40M	5	4	9	7	0
0604051800Z	20M	20M	11	13	11	12	3
	20M	40M	2	2	11	11	0
0604051900Z	20M	20M	13	11	17	13	2
	20M	40M	6	6	11	8	0
0604052000Z	20M	20M	11	12	16	19	5
	20M	40M	6	6	18	17	1
0604052100Z	20M	20M	18	17	22	26	4
	20M	40M	13	14	16	16	1
0604052200Z	20M	20M	13	15	19	18	5
	20M	40M	9	11	19	21	3
0604052300Z	30M	40M	9	8	13	13	0
	40M	80M	0	0	8	9	1
0604052359Z	40M	40M	18	16	25	21	1
	40M	80M	3	3	23	23	2
Totals			240	243	424	422	42
Averages			241.5		423		
RPD mode-control	<1.25%			1.242%		0.473%	

The observed ratio of phone to CW QSOs in progress in the measurement time frame is 423/241.5=1.75:1.

QSO relative count graph.



This chart illustrates the QSO counts tracking consistently throughout the survey. It adds an additional layer of validation to the individual measurements.

Conclusion

This report demonstrates and quantifies amateur radio band occupancy by mode of operation during a typical operating day. Data was collected in a consistent manner with validating statistical and graphical analysis.
We may conclude from this study that CW occupancy of the bands evaluated is significantly less than phone use of the same bands at the same time and utilizing consistent sampling techniques.

Note: 80M and 10M yielded surprisingly low CW QSO counts during the survey, when, in accord with propagation conditions, expected band usage, and phone QSOs in progress, they should have been more heavily populated. Therefore, 10M was not utilized in the survey, 15M was monitored as a candidate but was not utilized, and 80M was used after 40M activity dropped off.

APPENDIX B

Views Considered

The following comments are truncated from their original postings on www.qrz.com, where several groups have been discussing proposed and existing aspects of band planning, interference mitigation, and methods to coordinate activities that would be exceptionally incompatible when found on or about the same frequency. The posting parties identify themselves as interested, active amateurs with a variety of favorite modes. They have no known interests in commercial publishing, ham radio retailing, or political lobbying. The comments selected for inclusion here show our awareness of some of the concerns and support we anticipate if our Petition is allowed to move ahead.

Posted: April 10 2005,01:18 **K4KYV**, Don

The best way to prevent STATIC REGULATIONS from restricting future development in technologies as they change would be to get rid of subbands altogether, as Canada and most of the rest of the world already did years ago.

The complex matrix of present-day U.S. subbands based on license class and emission mode prevents efficient use of the spectrum we are allocated. Look at the vast gaps of idle frequencies that lie between about 3550 and 3700 kHz, while other portions of 75/80 are congested beyond usability.

It would be up to the amateur community to come up with a workable band plan that could be shifted, without the necessity of government rulemaking action, as necessitated by evolving patterns of amateur radio activity.

Posted: May 01 2005,18:36, **K3UD**, George

The way things are now, if someone plops down very close to the frequency you are using and causes interference, you can slide up or down frequency and explain the situation. More often than not, the interfering station will move off. However, How is it possible for one to negotiate with a digital robot wandering the band?

VIEWS CONSIDERED (con't.)

Posted: April 22 2005,21:39, **AA6YQ**, Dave

We need not ban Winlink from the ham bands. We need only encourage its adoption of better technology -- specifically, the ability to detect busy a busy frequency and refrain from responding in this scenario. The good news is that Winlink is developing a protocol with busy frequency detectors: SCAMP. Until SCAMP is ready for deployment, however, Winlink -- and all other semi-automatic operation without busy detectors -- should be confined to specific band segments in order to minimize the QRM they generate.

Posted: May 08 2005,01:12, **K4CJX**, Steve

I operated CW from 1955 to present, and CW was and is allowed anywhere on the HF spectrum. I don't operate CW on the SSB portions of the bands, why should I operate a 100 watt digital station where SSB resides. Do you think that SSB will be contained in a voluntary band plan? I would imagine there will be some mix. I also think that SSB and Pactor or any other current protocol will develop into protocols that carry voice, data and image. That is, if space is provided for its futher development.

Posted: May 19 2005,16:04 **AD4MG**, Luke

A voluntary bandplan must be worked out to coordinate operation of incompatable modes. We should avoid total division of spectrum by mode. That would make the proposal as difficult to adjust as what we have now. This seems to be where the bulk of the work will be. Deciding who needs what and where, and doing it fairly to all will be most difficult.

Posted: May 19 2005,12:41 **AE1X**, Ken

FCC does not want to have special licensing for advancement of the radio arts in the amateur bands. This requires administrative overhead that it feels is not necessary.

I believe that some type of plan the results in less regulation in Part 97 is a good thing, but there has to be a suitable flexible bandplan to go along with whatever segmentation results.

Posted: May 25 2005,02:37 AE1X, Ken

We will always be the guardians of the past as well the innovators of the future, a sort of museum/laboratory if you will. We have to be tolerant of all interests not just those that are innovating. All interests must be accomodated within our shared spectrum.

Appendix C

This proposal was written by the Communications Think Tank.

Members;

-S- (attest)

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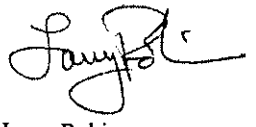
Emergency preparedness participant, VHF/UHF-FM
Author & photographer for published articles on "classic" hobbyist radio

W8ER



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Amateur Extra Class License - 1958
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Radio and TV Broadcasting Chief Engineer and Consultant (retired)

WD8BIL

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